

OUR BOOK SHELF.

On the Location and Examination of Magnetic Ore Deposits by Magnetometric Measurements. By Eugene Haanel. Pp. ix+132 and plates. (Ottawa, Canada: Department of the Interior, 1904.)

DR. HAANEL, Superintendent of Mines to the Canadian Government, read a paper under the above title at the annual meeting of the Canadian Mining Institute in the spring of last year, which is now published in book form by direction of the Minister of the Interior.

The work is substantially an account of the Swedish method of locating by means of specially constructed magnetometers the presence of magnetic ore deposits, and of determining their strike, direction of dip, and depth below the surface.

Von Wrede, as far back as 1843, indicated the value of the magnetometer in determining the location and extent of such deposits, but the first to turn the suggestion to practical account was Robert Thalén, who, in 1879, published his work "On the Examination of Iron Ore Deposits by Magnetic Measurements." Since that time the method has been greatly developed, and convenient field instruments—the Thalén-Tiberg magnetometer and the Thomson-Thalén magnetometer—are now placed by Swedish mechanicians at the disposal of mining experts. As yet, however, the knowledge and use of these instruments have been almost exclusively confined to Sweden, although scattered references to their employment are to be met with in English mining and scientific literature.

Rücker and Thorpe, in their great magnetic survey of the British Isles, showed the value of the magnetometer in determining the presence and the contour of underground magnetic material, and they were the first to direct the attention of English geologists to the importance of this instrument in geological inquiry.

Dr. Haanel has rendered the mining profession a great service by putting together a concise account of the Swedish method and practice. By the help of this manual a properly trained mining engineer would have comparatively little difficulty in mastering the theory of the field instruments and in acquiring familiarity with their use.

Whether, however, the greater number of English mining engineers are sufficiently well trained to follow the mathematical treatment of the theory, as set forth by Dr. Haanel, may be open to doubt.

Spokil, an International Language. By Dr. Ad. Nicolas. Pp. viii+272. (Paris: A. Maloine, 1904.)

THIS work consists of eight pages of preface, of eighteen pages of "grammar," of forty-four pages of exercises, and of 203 pages of a "Spokil"-French dictionary. The language consists of two kinds of words; those borrowed from existing languages with slight modifications and those coined on a system. The system is ingenious, but, in the opinion of the reviewer, quite unworkable. To take an instance:—To the letter "P" is attached various ideas; for example, those of motion, the foot, weight and the preposition "after." Thus we find Pimo, heavy; Pino, light; for the letter n contradicts the letter m; Peme, to lead; Pene, to come; the idea of "leading" being antithetical to that of "coming"; Pleal, wood; and Plealta, absence of wood; the idea of absence or default arising from the affix "ta"; and so on. As in Esperanto, different parts of speech are distinguished by different vowels, as, for example, Arta, dirt, or a dirty object; Arte, to dirty; Arto, dirty; and Artu, dirtily. The language is in what may be termed the agglutinative stage; for we have Apafil, derived from Ap, to lead, af, off, and il, agent; the whole word means an abductor. It may interest

chemists to know that the future name of butylene is to be eul vokilo; for e stands for carbon, u for hydrogen, l is terminative; vo means four, ki eight, and lo is the termination of a noun (?). English plurals in s are borrowed; likewise our classification of genders. The definite and indefinite articles are retained in the singular and plural, the latter in the plural in the sense of "the ones"; and the French "du" and "des" also appear in both numbers.

Enough has probably been said to give an idea of the character of the grammar; in conclusion, we will show what is "to serve as a model to future speakers"; it is "Zu erve di teil da les espel zoio." We do not think that that will be the fate of this artificial language. And it may be confidently supposed that the future universal language will not be invented by a Frenchman. There have been a good many attempts; and they all tend far too much towards inflection. Probably the most perfect languages from that point of view are those of the native Australians, who possess singular, dual, trial and plural, who have inclusive "we" and "they," as well as exclusive, and who indicate in half-a-dozen ways the particular position of the object designated by the word "that." The idea of an international language is an admirable one, and it will no doubt be realised, but the end is not yet come, and it is certainly not "Spokil."

The Non-Metallic Minerals: Their Occurrence and Uses. By George P. Merrill. Pp. xi+414. (New York: John Wiley and Sons, 1904; London: Chapman and Hall, Ltd.) Price 17s. net.

THE author of this valuable work is head curator of geology in the United States National Museum, and in 1901 he issued a scholarly guide to the study of the collections in the section of applied geology. Upon this guide he has founded the present work in which he brings together the widely-scattered notes and references relating to the occurrence and use of minerals of value other than as ores. Much of the information he gives is quite new, particularly in regard to the occurrence of American minerals; and the value of the work is greatly enhanced by the well-selected photographs of quarries and of striking specimens. Among these the views of the big vein between the peridotite and gneiss at Corundum Hill, North Carolina; of the quarry of lithographic limestone at Solenhofen, Bavaria; of large spodumene crystals in granitic rock, Etta Mine, South Dakota; and of quarries of bituminous sandstone in California and in Indian territory, are of special interest.

The scheme of classification adopted is as follows:—(1) Elements, (2) sulphides and arsenides, (3) halides, (4) oxides, (5) carbonates, (6) silicates, (7) niobates, tantalates and tungstates, (8) phosphates and vanadates, (9) nitrates, (10) borates, (11) uranates, (12) sulphates, (13) hydrocarbon compounds, and (14) miscellaneous, including grindstones, pumice, moulding sand, road-making materials, &c. Gems, building stones and marbles are not included in the scheme. Under each species will be found an excellent bibliography, and much interesting comment and information regarding its uses. For example, we are told that at Oberstein, on the Nahe, schoolboys' marbles are made in great quantities from limestone. The stone is broken into square blocks, which are thrown into a mill consisting of a flat horizontally revolving stone with numerous concentric grooves on its surface. A block of oak, of the same diameter as the stone and resting on the cubes, is then made to revolve over them in a current of water, the cubes being thus reduced to the spherical form in about fifteen minutes.

Of lithographic stone a series of analyses are given

showing the variation in composition, even in samples from the same locality. The only stone which has as yet been found to fill all the requirements of the lithographer's art is that from Solenhofen, in Bavaria. In the United States materials of the nature of lithographic stone have been reported from a number of localities described by the author. While, however, it was possible to get small pieces suitable for trial purposes, every locality has failed, as a constant source of supply of the commercial article. Very encouraging reports come from Canadian sources, and it is possible that a considerable lithographic stone industry may yet be developed in the Dominion.

Essais des Metaux, Theorie et Pratique. By L. Gages, Chef d'escadron d'Artillerie. Pp. 168. (Paris: Gauthier-Villars, no date.) Price 3 francs.

THIS little work, the sixth of the "Aide-Memoire" series on metals, by the same author, is written with much of the charming clearness of diction generally found in French metallurgical writings. There are two parts, the first on the theory of the tests and the second on practice. Considering the size of the page (convenient for the pocket), the matter is wonderfully well treated. Thus, to take the tensile test as an example, there is a general heading, Preliminary Ideas, with paragraphs (1) Period called Elastic, (2) Period of Deformation, (3) Contraction, (4) Curve of Traction. In this last is worked out from the ordinary tensile curve, showing elongation and tons per square inch on the original section, a curve showing tons per square inch on the real section, thus making plain to the student the reason for the apparently paradoxical form of the ordinary curve. The next main heading is the Law of Similitude, treated under six subheadings, the first of which, for example, considers the two permanent elongations produced during tensile testing. These two very distinct elongations are not only made clear, but methods are given for their determination, and the steps in the reasoning are worked out by simple mathematical methods where necessary. In like manner are handled such subjects as elasticity, influence of temperature, repetition of stresses, distribution of deformations, augmentation of elastic limit.

Part ii., on practice, treats in a general way of the tests applied by engineers before accepting cast-iron, steel, steel castings, &c. A short chapter gives a general idea of the kind of tests applied to metals other than the iron family. Two pages on microscopic metallography are full of wisdom, counselling caution in its use alike for specification and deduction, which might well be taken to heart by some present day advanced workers. If one remembers that the little book is of a very general nature and deals with ideas about tests and testing with few details, then it is heartily to be recommended.

A. McW.

Karl Heumann's Anleitung zum Experimentiren bei Vorlesungen über anorganischen Chemie. By Dr. O. Kühling. Third edition. (Brunswick: Vieweg und Sohn, 1904.) Price 19 marks.

So long as the lecture system of imparting information is retained, so long will the experimental demonstration remain its necessary accompaniment. It is useless to contend that a student cannot derive the advantage by seeing an experiment performed that he would were he to do it himself in the laboratory. Apart from the costliness of much of the apparatus, the difficulties of manipulation would put it beyond the power of a beginner to obtain satisfactory results, which depend, as they frequently do, on the skill and experience of the experimenter. Provided an experiment is neither merely pretty nor obviously sensational, nor lasts long enough to interrupt the train of ideas, the effect can

only be stimulating to the student. But the effective lecture experiment fulfilling these conditions requires a good deal of thinking and working out, and that is why the books on lecture experiments by Heumann and Newth are invaluable to teachers whose time outside the lecture room is occupied with research or the manifold duties of their departments. The third edition of Heumann's "Anleitung zum Experimentiren" will be welcomed by all teachers of chemistry. The author, who is perhaps better known as the discoverer of the indigo synthesis, died in 1894, shortly after the second edition of his work appeared, and the task of revision has fallen to Dr. Kühling. The experiments which he has added relate to electro-chemistry, to the use of liquid air in low temperature experiments, and to Moissan's electric furnace and Goldschmidt's reduction methods for the production of high temperature reactions. Physical chemistry also claims a small share of the new edition. The increasing use of the lantern has induced the editor to introduce a chapter on optical projection which includes an account of an electric installation for the lecture room. The author has had the advantage of obtaining much valuable information from such skilled experimenters as Landolt, Fischer, Buchner, Bunte and many others, with the result that the volume has swelled to a bulk which might dismay any ordinary lecture assistant.

J. B. C.

Church Stretton. Vol. ii. *Birds*, by G. H. Paddock; *Flowering Plants*, by R. de G. Benson; *Mosses*, by W. P. Hamilton; *Parochial History*, by H. M. Auden. Pp. 205 + xvii. Vol. iii. *Pre-Roman, Roman, and Saxon Archaeological Remains*, by E. S. Cobbold; *Church Architecture*, compiled by E. S. Cobbold. Pp. 124 + x. Both volumes edited by C. W. Campbell-Hyslop and E. S. Cobbold. (Shrewsbury: L. Wilding, 1904.) Price 5s. net each.

THE first volume of this instructive guide to Church Stretton, which is now complete, was reviewed in our issue for October 11, 1900 (vol. lxii. p. 571), and, as pointed out on that occasion, the first instalment dealt with the geology, macro-lepidoptera, and the molluscs of the neighbourhood. As might be gathered from the titles of the sections into which the present two volumes are divided, the completed account of Church Stretton contains all that a visitor or resident is likely to want to know. Moreover, as the volumes contain the results of local scientific research and observation by competent workers, they may be used with confidence as a guide to the natural history and archæology of the district.

In the introduction to the catalogue of the birds met with in the district of Church Stretton, Mr. Paddock directs attention to the fact that owing to the persistent persecution by game preservers, some of the larger Raptores, which formerly bred there, do so no longer, and that the smaller species are, from the same cause, rapidly diminishing in number. A similar fate has befallen some members of the Corvidæ, though to a lesser degree.

Mr. Benson's catalogue of the phanerogams of Church Stretton is conveniently arranged and exhaustive in its character. Owing to the ill-health of the compiler, this list was revised by Mr. Hamilton, who deals also with the mosses of the neighbourhood.

Fundamentals of Child Study. By Edwin A. Kirkpatrick, B.S., M.Ph. 2p. xxi + 384. (New York: The Macmillan Company; London: Macmillan and Co., Ltd.) Price 5s. net.

"THIS book," we are told, "is an attempt to present, in an organised form, an outline of the new science of child-study for investigators, students, teachers, and